Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

GEOGRAPHICAL RECORD.

AFRICA.

IRRIGATION IN CAPE COLONY.—The Director of Irrigation in the Cape of Good Hope Government made a journey through a part of the semi-arid northwestern districts of the colony in June and July, last year, and has sent the printed results of his inquiry to the Society. The problem is to make the best utilization of the waters to fertilize parts of this dry region. The journey was chiefly in the eastern half of the region between the Cape railroad to Kimberley and the Orange River. The available water will suffice to irrigate only a small part of the total area, but in the aggregate a great deal of land may be reclaimed to the highest fertility. The Brak River, for example, may be diverted over 5,000 acres of excellent land on Tigerpoort Vlei. The long stretch of islands in the Orange River between Upington and the Augrabies Falls comprise a large area of very fertile soil and offer the best prospect of utilizing the waters of the river on an extensive scale. In many of the smaller valleys the stock farmers may grow sufficient fruit, vegetables, and grain for their families and hired help by building dams or sinking wells. The Doorn River may be utilized to irrigate about 5,000 acres. The irrigation projects in Cape Colony are an interesting feature of the movement in many parts of the world to reclaim as large a portion of the arid regions as the water resources will permit.

SURVEYS IN UGANDA.—Lieutenant-Colonel J. H. Sadler recently read a paper before the Royal Colonial Institute (*Proc.,* 1904-5), in which he said that the work of preparing an accurate map of Uganda and of definitely fixing the areas of the estates allotted to the chiefs and landholders is being carried on by a Survey Department that has been raised to a complement of twelve English and nine Indian surveyors. Up to the end of March, last year, 7,000 square miles had been prepared by plane tabling for main and secondary triangulation; observations with the 10-inch theodolite had been taken over an area of 2,465 square miles, and 450 square miles had been mapped on the 1-inch scale.

NILE BASIN RAINS.—Captain H. G. Lyons, Director-General of the Survey Department of Egypt, has recently published a report on *The Rains of the Nile Basin in 1904* (Cairo, 1905. 8vo. Pp. 25), in which the results obtained at more than forty rainfall stations are discussed. Five years ago there were only six or eight places in the Nile basin where regular observations of rainfall were made. Thirty-two of the present stations are south of Berber (lat. 18° N.). Yet, with all this increase in the available material, there is still much that is not understood as regards the conditions which govern the rainfall of the Nile Basin, and as regards the relation between the rainfall in different parts of the basin. The seasonal variation of the rainfall depends, in the Nile Basin, upon the migration of the equatorial belt of low pressure, clouds and rain, and upon the conditions of the northeast and southeast trade winds. These winds, non-rainy when blowing horizontally, may give heavy precipitation when forced to rise over mountains. The maximum rainfall season is in summer, when the low-pressure belt is north. The winter rains, from November to February, do not affect the Nile supply, being purely local in their effects. They occur on the Red Sea hills, outside of the Nile

Basin, and on the Mediterranean coast; but these latter rains are mainly of importance for the crops raised on the coast west of Alexandria. The northern stations have a single rainy season, while the equatorial stations have two rainy seasons and two dry seasons. The line of demarcation between these two seems to be somewhat north of Wadelai. There are also signs of it in the observations at Nimule and Gondokoro. The rainfall in these districts falls characteristically in heavy downpours, usually as a thunderstorm, so that places near together may have annual rainfalls which differ greatly in amount. An analysis of the rainfall data for the past year shows that the rains of 1904 were generally below the mean. There was some improvement in the conditions in Abyssinia in July, but there followed a large deficiency in August, which seriously affected the volume of the Nile flood. No more favourable conditions followed, and therefore the low stage of the river was lower than usual. The high mean level of the equatorial lakes was maintained chiefly because of the fact that the meteorological conditions of July and August were less favourable than usual to evaporation. The rainfall in that district, which was somewhat deficient in the early part of the year, was above the mean in the autumn.

Captain Lyons, whose investigations in connection with the climatology of Egypt and of the Nile Basin are noteworthy, has further recently communicated to the Royal Society the results of an inquiry into the relation of the Nile flood to the variations of pressure in northeastern Africa (*Proc. Roy Soc.,* Vol. A76, 1905, pp. 66-86). He finds that the curve of the Nile flood varies inversely as the mean pressure of the summer. High and low pressures accompany low and high floods respectively. The pressure variations are generally of the Lockyer "Indian type" or the Bigelow "direct type." Pressure above or below the normal in the rainy months of Abyssinia coincides closely with deficiency or excess of rainfall. Between 1869 and 1903, on this basis, an accurate forecast of the flood could have been made from month to month in six years out of seven. On the same basis, Captain Lyons says:

> With weak summer rains and high-pressure conditions in September and the first part of October no large amount of water can have been stored up in the soil of Abyssinia, so that the springs will run off early, and a very low stage may be expected in 1905.

R. DeC. W.

Farming in British East Africa.—Two years ago there were only six European farmers in the British East Africa Protectorate, but, according to the latest official reports (*Africa,* No. 4, 1905), they now number about 600. The Director of Agriculture is continuing his experiments on the Nairobi and Naivasha farms, and his report is illustrated by photographs showing the work on these farms. The greater rains occur from March to May, when grain is sown, and crops ripen in the dry months from June to October. The typically tropical region, a coast-belt 100 miles wide, hitherto neglected on account of its climate, is now receiving attention, and about 100 acres are planted with cotton, which should yield 300 to 400 pounds of lint to the acre. There are excellent opportunities for fruit farms and dairying in the neighbourhood of the port of Mombasa. There is important development in the central districts from 100 to 250 miles inland, where settlers from the East Indies are making much progress, and their cotton crop is estimated to yield about 1,400 pounds to the acre. Many Europeans have settled in the lake district, where the fertility of the soil and abundance of rain afford excellent agricultural opportunities. The development of farming is proceeding at a fair pace in the best parts of the Protectorate, though not yet well represented in the exports.

SIR HARRY JOHNSTON'S OBSERVATIONS IN LIBERIA.—This African explorer made his third visit to the coast of Liberia in 1904, his earlier sojourns in that country having been in 1882 and 1885. In a paper describing his visit (*Geog. Jour.*, Aug., 1905) he says that in many places the heavy forest which grew down to the sea in 1882 has been cleared away to make room for plantations or settlements. He estimates that of the 45,000 square miles believed to be approximately the area of Liberia, 25,000 square miles are dense forest; about 15,000 square miles are the interior grass or park lands, occupied chiefly by the Mandingo cattle-raisers; about 3,500 square miles are covered with the plantations, gardens, and settlements of the Americo-Liberians along the coast; and 2,000 square miles or so are clearings made by the indigenous natives along the coast.

Rubber, he believes, is destined to be the great export product of the future, though the development thus far is very small. The wealth of the forest in rubber-yielding trees, vines, and bushes is unequalled in any other part of Africa, excepting, perhaps, in one or two small areas of the Congo Basin. There appear to be at least twenty-two trees, plants, and vines producing salable rubber, including the widespread *Landolphia owariensis* (the largest rubber resource in the Congo State), and the enormous rubber tree, *Funtumia elastica,* once so abundant in the Lagos Colony. The park-like country of hills, mountains, and grass-lands beyond the forest region is inhabited by a more or less Mohammedanized people, who genuinely, but not fanatically, adhere to Mohammedan principles. The spread of Mohammedanism in Northern and Western Liberia has been of great benefit to the country, diminishing the traffic in alcohol and checking drunkenness.

Sir Henry estimates the number of Americo-Liberians at only about 12,000; while the indigenous natives are supposed to number about 2,000,000. The immigrants from America have not, as a rule, withstood the climate much better than Europeans, and few of them have reared large families of children; but the later generation, born in the country, is taking hold of the work of development more efficiently, and this is partly due to the increasing practice—which he believes is sensible—of intermarriage with women of the fine, vigorous, indigenous races.

Americo-Liberian settlements are scattered quite thickly along all the lower part of the St. Paul's River, and some of them have a distinctly prosperous and prepossessing appearance. The part of Monrovia inhabited by the Americo-Liberians is composed of broad, grass-grown streets and substantial, well-built, comely-looking houses, churches, offices, and public buildings. The smart appearance of the houses contrasts strikingly with the neglected appearance of the roads, which were never made, but are simply unlevelled rock of more or less flat surface. He thinks the leading characteristics of the Americo-Liberians are their love of building and their remarkable politeness.

There is a good deal of civilization, with comfort and indications of progress, at the settlements that are grouped under the general name of Grand Basá, and also at the Sinó towns, the most important of which is Greenville:

> But perhaps, on the whole, the most go-ahead and energetic assemblage of Americo-Liberians is to be found at Harper (Cape Palmas). Here is a philosophical society which is doing a good work in collecting and printing statistics about Liberia. But Harper, unfortunately for Europeans, is a good deal more unhealthy than Monrovia.

Sir Harry says that the country is uncommonly free from the ordinary insect pests of Africa. There is apparently no Glossina fly to spread the tsetse disease. There are very few mosquitoes, and they seem to be entirely absent from much of the forest region. White ants are not very common or destructive in the centres of population.

There has been a marked advance in recent years in the good relations between the American settlers and their native subjects. The tribal chiefs assemble from time to time at Monrovia to confer with the authorities, and there is now no cause of dissension among them. One result of this mild rule of black by black is that the white man is everywhere received with great friendliness, because he is not associated in the minds of the natives with conquest or oppression.

AMERICA.

THE MINING AND QUARRY INDUSTRY OF NEW YORK STATE.—A report on this subject has been prepared by Assistant State Geologist Newland, and is issued as "Bulletin 93" by the New York State Museum. It presents a summary of the mineral resources of the State and their economic development. The value of the mineral production of New York in 1904 was $27,766,905, and about 10,000 workings (mines, quarries, and wells) contributed to the output. The items of largest value were: Building brick, $7,473,122; other clay products, $2,592,948; salt, $2,102,748; limestone, $2,058,405; sandstone, $1,896,697; petroleum, $1,709,770; mineral waters, $1,600,000; pottery, $1,438,634; iron ore, $1,328,894; Portland cement, $1,245,778; and natural rock cement, $1,207,883. All the various industries are described, and a full index facilitates reference. The Economic and Geologic Map of the State, issued as part of Museum Bulletin 15, and also in the 48th Museum Report, will be found useful in connection with this valuable compendium.

NEW YORK HARBOUR IMPROVEMENT.—Only a little over two of the eight miles authorized by Act of Congress to be dredged in the East or Ambrose Channel have thus far been completed. It is intended by the deepening and widening of this channel to provide an entrance to the harbour 2,000 feet wide and 40 feet deep, and to shorten the present route by nearly five miles from the bar.

THE MINERAL WEALTH OF INDIANA.—The 29th Annual *Report* of the Department of Geology and Natural resources of Indiana is a volume of 888 pp., chiefly devoted to the discussion of the mineral resources and industries of the State. The value of the output of these resources has steadily increased in the past decade, for, although the State has none of the metals, the variety and value of its useful minerals are very large. The six leading mineral resources are coal, petroleum, natural gas, building stone, clay products, and Portland cement, and the increase in their value in the past decade has been $19,257,939, or 115 per cent. Adding to the value of these resources the output of hydraulic cement, lime, whetstones and grindstones, sand and lime brick, artificial stone, moulding and glass sands, and other minor natural resources, the total value of the annual output foots up $40,000,000 or more.

A quarter of a century ago Indiana was noted chiefly for her crops of maize and wheat, her droves of cattle and hogs, and her bluegrass pastures and timberlands, a fact that makes the present development of her mineral resources all the more remarkable. The larger part of the *Report* is devoted to the clays and clay industries of the State. Shale was unknown among the natural resources a dozen years ago, and the great beds of soft, thin-layered rock which occur in vast areas in the coal counties were looked upon as a nuisance that had to be removed or tunnelled through before the coal could be reached. To-day hundreds of kilns are burning these shales into sewer-pipe, conduits, paving brick, drain tile, and other articles. The *Report* gives the location, thickness, and area of the most valuable clay deposits, indicates their fitness for the manufacture of various products, describes methods of manufacture, and gives the statistics of the various industries. There are also special reports on the natural gas and petroleum industries.

HARVARD TRAVELLERS' CLUB.—This club was organized in Boston in 1902 for the purpose of promoting intelligent travel and exploration. Professor William M. Davis is the President. The Council Report issued in May last said that the total membership was 172, an increase of 45 during the past year. It has been voted to establish a Club medal, to be given annually to the North American traveller who shall be deemed most worthy of this distinction. Regular meetings are held in Boston and Cambridge on the last Friday of the month, from October to April, excepting December.

SOME UNITED STATES MINERAL STATISTICS FOR 1904.—The value of the clay products of the United States in 1904, as reported to the United States Geological Survey, amounted to $131,023,248. Of common brick 8,665,171 thousands, valued at $51,768,558, were produced. The value of all brick and tile produced was $105,864,978, or 80.80 per cent. of the value of all the clay products. The value of the pottery was $25,158,270, or 19.20 per cent.

The total amount of coke produced was 23,621,520 short tons, valued at $46,026,183.

The salt industry yielded 22,030,002 barrels, valued at $6,021,222.

The production of crude petroleum in the United States was 117,063,421 barrels, valued at $101,170,466.

DR. ALEJANDRO RUIZ CADALSO, Professor of Geodesy and Topography in the School of Engineers and Architects in the National University of Cuba, sends a copy of his address on *The Map of Cuba,* delivered in April last.

Dr. Cadalso declares that there is no scientifically accurate map of Cuba in existence, because there has been no trigonometrical survey of the island and no comparative survey of its elevations. He describes the methods and the operations required for such surveys, and he looks forward to the day when a body of engineers trained in the School of the University shall produce the map of the Republic.

Older countries than Cuba have yet to wait for a map.

HYDRAULIC POWER FROM ANDEAN WATERS.—Mr. C. Reginald Enock is quoted by the *Bulletin* of the Bureau of American Republics (July, 1905, p. 132) concerning the undeveloped water-power in Peru on both the eastern and western slopes of the Andes. The source of this perennial water supply, he says,

> is the ice-cap above the line of perpetual snow . . . and the exceedingly heavy snow and rain storms of the high plateaus. All along this vast chain, from Ecuador to Chile, is a series of lakes, practically astride the summit of the Andes at altitudes from 12,000 to 17,000 feet above sea-level, and these lakes, with the streams to which they give rise, are the source of enormous hydraulic energy.

Thus the River Rimac, rising at an elevation of over 17,000 feet and reaching the coast at Callao only eighty miles from its starting-point, generates electricity for the railroad between Callao and Lima, and could supply constant and unlimited power over every part of its course. Similar facilities, still unutilized, are provided by many other streams all along the 1,500 miles of the Peruvian littoral.

METEOROLOGY IN MEXICO.—Señor Pastrana, Director of the Central Meteorologic-Magnetic Observatory of Mexico, prepared a monograph for the St. Louis Exposition descriptive of the meteorological work of that Republic. Although the

Central Observatory has been in existence for twenty-six years, the general meteorological service is only now being established. It is making rapid progress, and the work of the various States is being supplemented by many private persons, who are establishing observatories and stations at their own expense. The pamphlet outlines the work of the weather map and prediction service and of each of the observatories, and is accompanied by a map showing the distribution of observatories and stations, all of which, besides recording the usual weather data, are expected to observe electric, seismic, and vulcanological phenomena and river floods.

THE MEASUREMENT OF A DEGREE IN ECUADOR.—The French Committee in charge of the scientific features of the measurement of a degree in Ecuador has reported to the Academy of Sciences (C. R., Vol. 140, p. 998) that the completion of the work is still impeded by many difficulties. During the past year the large amount of fog in the upper region of the Andes, the bubonic plague in Ecuador, and the invalidism of several of the officers in charge have greatly hampered operations. In order to keep the cost within the sum now available, it will be necessary to shorten the length of the arc, omit the pendulum observations, and curtail operations in other ways. The report argues strongly against this impairment of the original plan, urges that every effort be made to carry out the work in its entirety, and asserts that, even after allowing for further delays, the whole undertaking should be completed by May next year.

CHILEAN METEOROLOGY.—Five volumes of the *Anuario del Servicio Meteorolójico de la Direccion del Territorio Marítimo* of Chile have thus far been published, for the period 1899-1903. These publications are not widely known. They are not listed, for example, in the "*Atlas of Meteorology.*" They are of quarto size, and average between 400 and 500 pages. The marine meteorological service of Chile was under the direction of the Central Meteorological Observatory of Santiago until the year 1899, when it was transferred to the so-called Direccion del Territorio Marítimo. The observations contained in these volumes are made at stations situated on the coast of Chile, stretching from Arica in the north to the Strait of Magellan in the south, thrice daily, at 8 A. M., 2 and 9 P. M., although during the first half of 1899 the hours were 7.30 A. M., 1.30 and 9 P. M. Three times a month, on selected term days, observations were made every three hours until the year 1903. In the first volume, sixteen stations are included; in the second, fourteen; in the third and fourth, sixteen; and in the fifth, eighteen. In the volume for the year 1903, for each station which was in operation in 1902 and 1903 there is a graphic representation of the variations of the different meteorological elements during these two years. The curves for one year are in red, and for the other in black. These are the only diagrams in the five volumes. In 1903 the names, positions, and altitudes of the several stations were as follows:

STATION.	S. LAT.	W. LONG.	ALTITUDE (M).
Arica	18°28′05″	70°20′30″	5
Iquique	20°12′05″	70°11′03″	9
Antofagasta	23°38′54″	70°25′20″	4
Caldera	27°03′25″	70°52′40″	28
Isla Chañaral	29°00′50″	71°36′40″	48
Coquimbo	29°56′30″	71°21′30″	26
Valparaiso	33°01′05″	71°38′05″	41

STATION.	S. LAT.	W. LONG.	ALTITUDE (M).
Juan Fernandez	33°37′00″	78°50′00″	10
Constitucion	35°36′00″	72°38′00″	33
Talcahuano	36°36′51″	73°06′08″	91
Isla Santa Maria	36°59′05″	73°32′05″	65
E. of Isla Mocha	38°21′22″	73°58′06″	18
W. of Isla Mocha	38°22′12″	73°53′44″	32
Punta Niebla	39°52′02″	73°24′02″	43
Punta Galera	40°01′05″	73°44′02″	38
Ancud	41°51′00″	73°50′00″	48
Islote de los Evanjelistas	52°24′00″	75°06′00″	53
Punta Dungeness	52°23′55″	68°25′10″	3

It will be noted that these stations vary very little in longitude, and are all very near sea-level. This fact gives the data added interest.

While these volumes present no discussion, containing nothing beyond the tabulations and monthly and annual summaries, and while the records are not complete in some few cases, owing to illness or absence of observers, errors in or lack of instruments, and some diversity in methods of recording wind velocity, the material here collected is of very great value. Chile is in many respects the most interesting country in the world, climatologically. It has a great latitudinal extent. It ranges from aridity in the north to abundant rainfall in the south. It extends across the subtropical belt and into the belt of the prevailing westerlies of the Southern Hemisphere. It has certain striking resemblances to the climate of the Pacific coast of North America. For these and other reasons Chilean meteorological data are of peculiar value and interest, and these annual volumes of the marine meteorological service of Chile are welcome additions to the library of climatologists.

R. DeC. W.

THE TRANS-SOUTH AMERICAN RAILROAD.—The resumption of work on the railroad between Buenos Aires and Valparaiso is announced. The completed line will be 893 miles long, and in the Andes region it will cross elevations over 10,000 feet above sea-level. The only section not yet built is in the Chilean Andes, and is 29.76 miles in length. When this very difficult part of the road is finished only a day and a half will be required for passage between the capitals of Argentina and Chile.

RAILROADS IN BOLIVIA.—The President of Bolivia has secured from Congress authorization to apply the $10,000,000 received from Brazil in the settlement of the Acre dispute to the construction of other railroads. That will not only open the way to the Amazon River by circumventing obstructions to the navigation of some of its tributaries, but will also connect the cities of La Paz, Oruro, Cochabamba, Potosi, and others. These new railroads will make some of the large mining centres much more easily accessible than at present.

ASIA.

CENTRAL ASIAN COTTON.—Ferghana, in Russian Central Asia, is Russia's largest source of raw cotton within her Empire. The *Board of Trade Journal* (No. 451) reports that the area under cotton in Ferghana, in 1904, was 504,900 acres, of which 467,100 acres were planted with American seed. The total harvest was 185,000 tons. The Marghilan district had the largest cotton area; but Andizhan gave the best harvest, more than a third of the whole. Since 1900 the increased attention given to cotton-raising has stimulated irrigation and cultivation so that fertile land now brings many times its value ten years ago. The left bank of the Syr Daria for hundreds of miles will be capable of extraordinary productivity when irrigation works are developed; and in the Chimkent district alone there is said to be about 500,000 acres of good land.

GEOGRAPHICAL NAMES IN THE PHILIPPINES.—The *Official Gazette,* published at Manila, contains, from time to time, a list of the decisions of the Philippine Committee on Geographical Names. This Committee, appointed by Civil Governor Taft, in November 1903, consists of the chiefs of the Philippine Bureaux of the Coast and Geodetic Survey, the Ethnological Survey and Public Lands, and two Philippine members. Among the decisions rendered on May 1 last were Balintang for the island and channel north of Luzon, and Subic for the bay and town on the west coast of Luzon.

CLIMATE AND WEATHER OF TURKESTAN.—There is a good deal of climatological interest in the Carnegie Institution volume on *Explorations in Turkestan, with an Account of the Basin of Eastern Persia and Sistan,* by Professors Pumpelly and W. M. Davis, and Mr. Ellsworth Huntington (Washington, April, 1905). Both past and present climatic conditions receive consideration. Full confirmation has been found of the statements concerning "a progressive desiccation of the region of long standing, which has from a remote period continually converted cultivable lands into deserts and buried cities in sands" (p. 19). A view of one of these sand-buried cities is given on page 12. Abandoned sites of human occupation, large and small, and widely distributed, were discovered. A correlation of the physical and human histories is believed to be obtainable through a continuance of the investigation. The increased precipitation on the mountains of the Tian Shan as compared with the aridity of the deeper valleys, which are parched by evaporation into drying winds which descend over them, is noted (pages 71-72), and the observations of Sewerzow on the seasonable migration of the Kirghiz, with their flocks and herds, in search of vegetation at great altitudes, are confirmed by Davis. An interesting relation between insolation, vegetation, and erosion, as the result of differences of exposure, is also noted (p. 72). In the badlands of the Narin Basin (6,500-7,000 ft.) the sunny slopes were found to be bare and well dissected, while the shady slopes were smoother, and were covered by sparse herbage. On the high spurs of the Kungei Alatau (10,000 ft. and more), above the tree line, the sunny slopes were better covered with grass than the shady slopes. In the first case, sunshine promotes aridity and is hostile to vegetation; while, in the second, sunshine melts the snows, and is therefore favourable to vegetation.

Much attention is paid to oscillations of climate during recent geological times, and evidence is adduced in favour of five advances of the ice during as many glacial epochs. Between the advances there were periods of retreat almost as warm as, if not warmer than, the present climate. The climate of Persia is discussed (pp. 227-229) in connection with the characteristic physiographic forms of that country, and mention is made of the constant high and dry winds of the summer. These are very disagreeable, but have also certain useful effects. For example, in the houses of the wealthier classes an open doorway in the north (windward) side is stuffed with small brushwood, upon which a servant throws water. Evaporation then cools the air which whistles through the brush, and makes the interior of the house comfortable. If the wind fails, as it occasionally does for a day or two, the heat within becomes insufferable. Windmills are built, often in rows of ten or twelve running east and west, in order that advantage may be taken of these summer winds. In one case fifty of these windmills were seen in one row. Because of these winds, no fruit can be raised upon trees in Sistan. The wild watermelon, under the influence of the winds, spreads its branches to the south, and they "lie in a long bunch so exactly oriented that the plants might almost serve as a compass." These prevailing winds have scooped great hollows, six or eight feet deep, in the plain, the long axis of these hollows being always directed to the north-northwest. Another curious effect is noted in the case of the sun-dried brick ruins of Sistan. When the old walls stand in a north-and-south direction—*i. e.,* parallel with the prevailing wind—they stand indefinitely, although gradually worn very thin; but when the walls stand east-and-west, they are very soon blown away, and disappear entirely (p. 229). An illustration (p. 229) shows some of these north-and-south walls standing, while there are hardly any east-and-west walls to connect them.

At the end of the Report on the Basin of Eastern Persia and Sistan, Mr. Huntington presents an interesting account of the relations of climatic changes and history in the region under discussion. He finds a striking agreement between legend, history, and physiography as regards evidence of climatic change, and after a careful investigation of the facts thus collected, he comes to the following conclusion:

> The history of Sistan, so far as it can be made out, seems to indicate a gradual desiccation of the country from early historical times down even to the present. The evidence of archæology, history, and tradition in the surrounding countries points in the same direction. At Sistan history and physiography appear to join hands, for the change from the conditions of greater water supply during antiquity to the desiccation of to-day is apparently the change from the last fluvial epoch to the present interfluvial epoch.

There is, further, much information in this Report concerning the action of wind in arid regions and concerning the climatic control of land forms, so that the volume will prove of value to the geologist, the physiographer, and the archaeologist, as well as to the climatologist. R. DEC. W.

THE METEOROLOGY OF INDIA, 1892-1902.—The period of 1892-1902 was marked by certain peculiar features in India which were unique in their degree of development and their persistence. From 1892 to 1894 there was excessive rain. From 1895 to 1902 there was a steady and persistent deficiency of rainfall over the greater part of India. This deficiency affected certain districts to such an extent that it caused two of the most extensive and most intense famines which have ever occurred in India. Similar features to those which were noted in India extended over a very wide area, probably including the Indian Ocean and adjacent countries, as well as the greater part of Southern Asia. Concerning most of this great area, the information at hand, or obtainable, is very meagre; but Sir John Eliot, late Meteorological Reporter to the Government of India, has made an admirable—as he calls it, "preliminary"—study of the more important features of the meteorology of this territory during this remarkable period, which appears as *Indian Meteorological Memoirs,* Vol. XVI, Part II, 1905. This folio volume, comprising 354 pages, with numerous tables and curves, does not attempt to "give a satisfactory and conclusive investigation of the primary causes or actions giving rise to these abnormal features," one of its main objects being "to indicate that it is absolutely necessary, in order to ascertain the causes of these and similar large variations, to study the meteorology of the whole Indo-Oceanic field."

R. DEC. W.

CRITICISM OF MAPS OF ASIA MINOR.—In an address on "Exploration in Asiatic Turkey" before the Royal Geographical Society (*Geog. Jour., Sept.,* 1905), Col. P. H. H. Massy said the first difficulty which confronts the traveller in Asia Minor is the want of a good map. No reliable map is available. We owe thanks to Kiepert for placing something in our hands and for the present effort gradually to correct that something; but there is much still to be noted and corrected, and it is very desirable to encourage well-equipped volunteers to go out and systematically map Asiatic Turkey by sections.

Kiepert's new sheets are somewhat involved by a mixture of ancient and modern names. This is perhaps due to the information supplied by archæologists who have lately travelled there. It would be better to keep the modern entirely separate from the ancient; also to build up a new map gradually as reliable topographical information is obtained. The map of Northeastern Asiatic Turkey, by Mr. H. F. B. Lynch, is a great advance on earlier maps, but even this excellent map fails to show some routes which Col. Massy followed.

EUROPE.

A FORTNIGHT AT THE SUMMIT OF MONT BLANC.—On June 17, according to the London *Times* (weekly edition, July 28), Mr. Millochau, of the Meudon Observatory, near Paris, started for the summit of Mont Blanc with several guides and porters, provisions, and astronomical instruments. They were caught in a violent thunderstorm on the way up the mountain, and were much exhausted when, on June 20, they reached the summit. The Janssen Observatory was found in fairly good condition, and, though it was not intended for a dwelling-house, it served this purpose for Mr. Millochau and his colleague, Milan Stefanik, who lived in it from June 20 to July 3. They employed themselves taking observations, and would have prolonged their stay beyond a fortnight if provisions on the way up to them from Chamonix had not failed to arrive on account of bad weather. During the last days of their stay they were reduced to short rations.

THE ROUTES OF BIRD MIGRATION IN EUROPE.—*Ciel et Terre* for April 15, 1905, reprints from *Chasse et Pêche* some notes on bird migration in Europe by Dr. Quinet, who has also constructed charts showing the routes followed by the birds, and has prepared synoptic maps of these migrations. The summer and winter habitats of the different birds may thus be graphically shown; the points of departure; places for obtaining food; temporary resting-places; the direction of the migrations, and the final destinations. Dr. Quinet divides Europe into three large climatic zones, as follows:

Marine Climate.—1, Western Europe, with relatively mild summers and winters; 2, The Mediterranean region, with hot summers and mild winters.

Extreme Continental Climate.—Eastern Europe, with hot summers but cold winters.

Rains.—1, Western Europe has its maximum rainfall chiefly in autumn, when the warm and moist air of the westerly winds blows over cold land surfaces; 2, Central and Eastern Europe have chiefly summer rains, when the air is moist and is well warmed over the warm surface; 3, Northern Europe, with dry summers. In this general arrangement of climates the author finds explanation of the large migrations, which he studies out in detail, classifying them in a general way by points of the compass. The laws of bird migration are considered briefly, as well as the conditions under which the different birds journey, some by night, some at dusk or dawn, some by day, some in groups, some by individuals, etc., etc. The darkest nights do not interfere with the movements of some, but thick fog brings them all to a stop if they are flying over the land, while those which are crossing the sea lose their way or beat against lighthouses or the lights of vessels. Mountain ranges, steppes, oceans, deserts, whether of ice or of sand, are impassable barriers for most migrating birds, forcing them to seek other routes along which they may rest and find food. The Asiatic species, in their migrations, follow the same general directions as do those of Europe—namely, from northeast to southwest in autumn, and from southwest to northeast in spring. These directions Dr. Quinet finds the logical ones in view of the general distribution of climates; but they are not rigidly adhered to, and many birds of passage travel directly north and south. R. DeC. W.

THE FLOW OF THE THAMES IN RELATION TO PRESSURE AND RAINFALL CHANGES.—In *Nature* for June 22, 1905, Dr. W. J. S. Lockyer considers the relation of *The Thames Flow and British Pressure and Rainfall Changes.* Curves are plotted showing the Thames flow, and the rainfall and pressure (curves inverted) for a period of about forty years, with the result that there is a striking similarity in the lines. Hence Dr. Lockyer believes that any method of forecasting pressure would make it possible to determine the rainfall beforehand. He finds that in some years the British area belongs to a pressure system that extends over the region of which India is about the centre, and then in another series of years the British Isles are dominated by the antipodal pressure system of which South America is the middle portion. This complexity makes it difficult at present to forecast British pressures, but the author believes that further investigation will throw much light on the subject. R. DeC. W.

INVERSIONS OF TEMPERATURE ON BEN NEVIS.—Mr. Andrew Watt, of the Scottish Meteorological Society, discusses the inversions of temperature noted between the base and summit of Ben Nevis during the thirteen years, 1891-1903, in *Nature,* Vol. 71, 1905, pp. 583-584. The inversions are grouped according as the summit temperature was higher—(1) At one hour at least of the day; (2) at each of the twenty-four hours of the day; (3) in the mean of the twenty-four hours of the day. The number of cases was as follows:

	CLASS 1.	CLASS 2.	CLASS 3.
January	7	..	3
February	18	1	5
March	11	..	1
April	9	..	..
May	7	..	..
June	8	..	..
July	4	..	..
August	4	..	..
September	22	..	3
October	15	..	5
November	29	3	8
December	24	5	8
Year	158	9	33

It appears that inversions which continued throughout the whole twenty-four hours occurred only in February, November, and December; while those of Class 3 occurred between September and March only. The average difference of temperature between Ben Nevis and Fort William ranged from 16.8° F. in April to 14.4° in December. The mean difference for the whole year is 15.4°. Inversions at all seasons are large departures from the usual conditions. In February, 1895, at 9 A. M., on the 19th, the summit was 17.6° warmer than the base (Ben Nevis, 33.6°; Fort William, 16.0°). This is the greatest inversion recorded there. The inversion of the greatest duration was in November, 1897, when the temperature at the summit was higher than that at the base for fifty-eight consecutive hours. The mean daily temperature on November 4, 1897, was 9.7° higher on Ben Nevis than at Fort William. R. DEC. W.

THE ORDNANCE SURVEY.—The annual report of the progress of this survey to March 31, 1905, shows that great advance has been made during the past year. The map, on a scale of one inch to a mile (Outline and Hill editions), has been completed for the entire United Kingdom. The coloured edition has been completed for England and Wales and begun for Scotland. About three-quarters of the coloured map of Ireland has been finished. The two-mile drawing of England and Wales has been completed, and more than half of it has been published. The Outline edition, on a four-mile scale, has been published for the whole of the United Kingdom; and county and district maps with main roads coloured have been published for the whole of Great Britain. The ten-mile map in colours has been published for Great Britain, and will soon be issued for Ireland. The map on a scale of 1:1,000,000 has been completed and published in colour for the whole of the United Kingdom. All these maps, excepting the last named, will soon be procurable, folded for the pocket. The Ordnance Survey maps are now supplied to schools at a very low price. It is hoped that this will help to improve geographical education and make the maps better known to the general public.

CABLE TO ICELAND.—*Export* (No. 29, 1905) says that arrangements have been fully completed for laying a cable between Iceland and the Shetland and Faroe Islands. The Shetlands are already connected with mainland by cable. The new cable will extend from the Shetlands to Thorshavn on the Faroes, thence to Iceland and Scotland; thus the electric communications with the continent which Iceland has so long desired will be secured. The Great Northern Telegraph Co. has the concession for laying and operating the cable. Not only Denmark and Iceland, but also all countries that are interested in the Iceland fisheries, will profit by the cable, and the daily weather report from Iceland will be of immense service to navigators and to science. The cable will be landed on the east coast of the island, and the Government of that colony will build and maintain the land line that will connect the cable with Reykjavik.

POLAR.

RESCUE OF THE ZIEGLER-FIALA EXPEDITION.—The *Terra Nova,* which sailed for Franz Josef Land early in the summer to rescue the Ziegler North Polar Expedition, has returned with all the members on board excepting a Norwegian sailor, who had died. The Fiala party had not been heard from since it left Norway in July, 1903, until its relief by the *Terra Nova* on August 1, this year. The explorers experienced great hardships, as their vessel, the *America,* was crushed in the ice a few weeks after they reached Franz Josef Land. The following facts are condensed from Mr. Fiala's statement published in the London *Times* (weekly edition, Aug. 25), which gives the fullest account of the expedition yet published.

The *America*, with the expedition on board, left Vardö on July 10, 1903, and, after considerable delay among the ice fields, arrived at Cape Flora in the southern part of Franz Josef Land on August 12, where a small supply of provisions was landed. The vessel then proceeded up the British Channel to Teplitz Bay, Crown Prince Rudolf Island, the most northern harbour in Franz Josef Land. Here the base camp of the expedition was established and named Cape Abruzzi. Part of the cargo, including ponies and dogs, was landed with difficulty, as the ship was in the ice nearly a mile from the shore. A house was then constructed.

On November 21 the *America* was crushed in the ice. She did not disappear until January 22, when all the old ice was broken up, the ship sank, and also 100 tons of coal and 40 tons of provisions, which had been cached on the ice and could not be sledged to camp on account of the almost continuous storms.

In March, 1904, two parties left camp on the sea-ice for the north. Both attempts to make a high northing were failures:

> The ice conditions were frightful, and nearly every one of the sledges was hopelessly smashed, making it absolutely necessary, if the equipment was to be saved for another attempt in the following year, that the party should return to Camp Abruzzi. Though this column only reached a comparatively short distance from land, all the way had to be cut with ice axes, and it now became clear that it was useless to attempt to get further north during the spring of 1904.

The summer and fall of 1904 were spent chiefly in watching for the relief ship which, it will be remembered, was baffled by the ice and had to return to Norway. By September 10 it was realized that the party would be compelled to spend a second winter in the Arctic. Coal was discovered 600 feet up the side of a steep mountain, and it augmented the fuel supply.

The party prepared to make a spring sledge trip to the north. It was ready to leave in February, but the weather was even worse than during the previous year. The start was delayed until March 16. Very slow progress was made, as the ice was rougher than in 1904. All the sledge men had to work at cutting the trail and then return to help the dog teams over the rough road. Deep snow, numerous stretches of open water, and fog all helped to delay progress. Realizing that the record for progress north could not be beaten under such circumstances, the party returned to camp. The outlook for the relief ship was resumed, and on Sunday, July 30, the news came that the *Terra Nova*, with Mr. Champ in command, had arrived at Cape Dillon. No time was lost in getting the party together and starting southward.

The avowed purpose of both the Ziegler expeditions was to reach the north pole, or at least attain a high latitude. The second expedition seems to have been even less successful than the first, under Mr. Baldwin, for he at least succeeded in planting tons of supplies on Crown Prince Rudolf Land, near the most northern camp which the Fiala party established. This party did not succeed in getting the larger part of the supplies brought by the *America* to land. Though they had been placed on the ice within less than a mile from the shore many weeks before, they were finally engulfed in the sea. With this large supply of fresh stores lost, the Fiala party could scarcely have survived if it had not been for the dépôts which Baldwin had planted in their neighbourhood. No important scientific results of the expedition have yet been described.

ANTARCTIC METEOROLOGY.—Mr. R. C. Mossman, who was in charge of the

Antarctic Meteorological Station at Scotia Bay, South Orkneys, contributes to *Symons's Meteorological Magazine* for June some account of the work, and of the phenomena observed, at that station. Much trouble was experienced with the wet bulb thermometer, and at temperatures below 10° F. the muslin covering was done away with altogether, and the bulb was painted with water by use of a camel's hair brush. Most of the snow that fell was hard and granular; large flakes were rarely seen. Ice storms were frequent, and gave much trouble. Snow crystals were observed to be deposited from fog. Remarkable mirages were common, and solar and lunar halos, accompanied by mock suns or moons, with horizontal and vertical circles, were occasionally observed, but rainbows were uncommon. Colourless fog bows were noted at times, but not a single case of the aurora was seen. Neither Nordenskjöld nor Charcot, who both wintered farther south than the South Orkneys, reported any auroras. Stratus clouds were the commonest cloud-forms in summer and winter. In the former season they covered the sky for days together without a break. Cirrus clouds were seen at very low altitudes, from 6,000 to 8,000 feet above the surface. Foehn winds were noted on several days, usually in winter, and invariably blew from the W.N.W., across some high mountains. None of the curious rises of temperature during blizzards, which were reported at the winter quarters of the "Discovery" and by Nordenskjöld, were observed. The minimum temperature recorded was —40° F. The mean annual approximates 23° F. R. DeC. W.

PERSONAL.

Dr. A. J. Herbertson has been appointed Reader in Geography in the University of Oxford from October 1, to succeed Mr. H. J. Mackinder, who resigned the readership to give his whole time to the work of the London School of Economics. Dr. Herbertson is also editor of the *Geographical Teacher,* one of the authors of the Atlas of Meteorology, and in the past ten years has contributed largely to the literature of educational and other branches of geography.

Professor Guido Cora, the well-known Italian geographer, has been elected a member of the Pontificia Accademia Romana dei Nuovi Lincei of Rome.

Mr. Bailey Willis, who went to Europe in July to make certain studies under a grant of the Carnegie Institution, returned home in July.

Professor T. C. Chamberlin has been appointed a member of the Illinois Survey Board, the other members being Governor Deneen (*ex officio*) and President James of the State University.

Dr. Siegfried Passarge, Privatdocent in Geography at the University of Berlin, has accepted a call to be Professor of Geography at the University of Breslau.

GENERAL.

BIBLIOTHECA GEOGRAPHICA FOR 1901.—Each of the annual volumes of this standard work of reference is welcomed as a library convenience of the first class. The volume for 1901 has 571 pages,, and practically covers the entire literary geographical output for the year. It is gratifying to read in Editor Baschin's Preface that Vol. XI (1902) will probably be issued in less than a year after the publication of Vol. X. Little can be done to improve this useful and comprehensive bibliography excepting to fill up the rather wide gap between the year treated and the date of its publication. The work of preparing each volume is very great, and most of it devolves upon Mr. Baschin, but it is to be hoped that gradually he may be able to bring the annual up nearer to date. This wish may be expressed, not in the way of criticism, but merely in the belief that such a consummation is to be desired as soon as it can be attained.

Mistakes are surprisingly few. It was easy, however, to make the blunder of presenting the work of two American writers named Adams and bearing the same initials as the literary output of one man.

A BIBLIOGRAPHY OF LITHUANIA.—Mr. Baltramaitis has prepared a list of the literature relating to Lithuania, its geography, history, law, statistics, and ethnography, including folklore. There are 8,514 titles, and the bibliography fills 614 pages in Vol. XXV of the *Memoirs* of the Russian Geographical Society. It is followed by an Appendix containing a list of 2,665 Lithuanian and old Prussian books printed from 1553 to 1903.

EXPLORATION OF GOUGH ISLAND (DIEGO ALVAREZ).—This island lies in the Southern Atlantic, about 1,500 miles W. by S. of the Cape of Good Hope, with the island of Tristan da Cunha as the nearest land, 280 miles away. It is above 8 miles long and 4 miles broad, and is one of the peaks of the mid-Atlantic ridge, which probably makes its most southerly appearance above the surface of the ocean in Bouvet Island. Though it was no doubt discovered in the sixteenth century, and has been sighted or visited by a considerable number of navigators, the island remained practically unexplored until the Scottish National Antarctic Expedition landed there in April, 1904, on its way from the Antarctic to Cape Town. The visit was brief, but observations and collections were made, and the results were important, for this rock was really the only Atlantic island which was still unexplored. Mr. R. N. Rudmose Brown, one of the party, gives a description of the island, with illustrations, in the August number of the *Scottish Geographical Magazine,* and the following facts are taken from his article:

The party were pleasantly surprised to find the island beautifully clothed in green from the water's edge almost to the summit. Numerous brooks were pouring out of the hanging valleys and leaping over the sheer precipices some hundreds of feet into the sea. The island is very precipitous, and in most places rises from the sea in cliffs that are from 200 feet to nearly 1,000 feet in height near the northern end.

Above these cliffs the ground rises more gradually towards the summit, which is estimated to be 4,380 feet in height. Towards the south-west end of the island there is a more or less level plateau, about half a square mile in area, at an elevation of about 300 feet. Everywhere else the island seems to rise into steep ridges separated by narrow glens.

At the foot of many of the cliffs is a narrow strip of beach or rocks at low tide, but the interior is accessible only from a few places on the shore. At the seaward end of the glen, on the east side, is the best landing-place, and here a number of ruined huts may still be seen. A settlement here would have shelter except from the east; there is a good supply of fresh water, and about an acre of level ground might be used for raising vegetables, or even for grazing. There is really no good anchorage, for the water deepens rapidly and the holding-ground is bad.

Dr. Pirie, of the same expedition, says the island has some resemblance to Madeira in its jagged outlines and steep slopes and cliffs cut deeply by ravines; but it differs from Madeira in the height and steepness of the cliffs, which nearly everywhere come sheer down to the sea without any gradual slope. As far as is known the rocks are wholly of volcanic origin.

Twenty-three or twenty-four species of birds were recorded, of which the expedition collected nineteen. The only mammal is a mouse, introduced by earlier visitors. The vegetation is dense in most parts, and it is consequently difficult to move over the island. Thick tufts of tussock grass (*Spartina arundinacea*) grow in abundance over all the lower ground. Gnarled and stunted trees (*Phylica nitida*) grow from sea-level to almost 2,000 feet. The flora, as now known, contains 17 species of flowering plants, 10 of ferns, 10 of mosses, 3 hepatics, 7 lichens, and 1 fungus, besides several small algæ. As the island lies in the region of prevailing westerly winds, stormy weather and heavy seas are common.

A SUPPLEMENT TO DR. MILL'S HINTS TO TEACHERS.—Eight years ago Dr. H. R. Mill published a small book entitled "Hints to Teachers and Students on the Choice of Geographical Books for Reference and Reading." The object of the little volume was to place before teachers and students a selection of the best books on geography as an educational subject and on different parts of the world. The book has been used with great advantage both in the United Kingdom and this country; and in preparing a list supplementary to that which Dr. Mill collected Dr. A. J. Herbertson has continued and augmented the usefulness of this entire selection of text-books and works of reference that are especially useful to teachers and students. With the mention of each book in the later list are a few lines of description or characterization. Seventy-seven works, most of which have been published since 1897, are included in the parts of the supplementary list printed in *The Geographical Teacher,* No. 10, 1904, and No. 12, 1905.

THE FIFTIETH INTERNATIONAL CONGRESS OF AMERICANISTS will meet at Quebec from Monday, the 10th, to Saturday the 15th, of September, 1906.

The membership fee is Three Dollars (fifteen francs, twelve marks). Members are entitled to vote, to take part in the decisions, and to receive *gratis* the publications of the Congress.

Associate Members pay a fee of One Dollar (five francs, or four marks). They may attend all the general meetings, but they have no vote, and they do not receive the publications.

Payment of fees to be made by P. O. order, or by cheque negotiable at Quebec, drawn to the order of the Treasurer of the Committee of Organization, M. Alphonse Gagnon, Parliament House, Quebec.

NEW MAPS.

AFRICA.

NORTHEAST AFRICA.—Four Sketch Maps. Scales, 1:12,500,000 and 1:18,000,000. By Fernand Maurette. *Annales de Géog.,* No. 76. Armand Colin, Paris, 1905.

These black-and-white maps include the triangular territory between Cape Guardafui and the Upper Nile, and between Eritrea and British East Africa. They were compiled from authoritative sources to show the present condition of our knowledge of this part of Africa in respect to its topographic relief, climate, hydrography, and distribution of vegetation. They illustrate the first part of an exhaustive study by Mr. Maurette, entitled, "État de nos Connaissances sur le Nord-Est Africain."